

What is claimed is:

1. A method comprising determining an internal temperature of a device, and steps for unlatching an actuator of the device based on said temperature.

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2. The method of claim 1, in which the steps for unlatching the actuator of the device are steps of a DC unlatch process.

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3. The method of claim 1, in which the steps for unlatching the actuator of the device are steps of an AC unlatch process.

4. The method of claim 1, in which the steps for unlatching the actuator of the device are steps of an unlatch procedure.

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5. The method of claim 4, in which the device is a head-disc assembly, and in which the steps of the unlatch procedure comprise:

reading a thermistor to determine a value of the thermistor, wherein the value of the thermistor corresponds to the internal temperature of the head-disc assembly;

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comparing the value of the thermistor to a predetermined temperature threshold value;

initiating a DC current unlatch process when the value of the thermistor is greater than the predetermined temperature threshold value;

validating success of the DC current unlatch process unlatching the actuator from a latch of the head-disc assembly;

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activating an AC current unlatch process when the DC current unlatch process is unsuccessful in unlatching the actuator from the latch of the head-disc assembly; and in the alternative

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commencing the AC current unlatch process when the value of the thermistor is less than the predetermined temperature threshold value.

6. The method of claim 5, in which the latch is a magnetic latch, and in which the DC unlatch process comprises the steps of:

selecting an initial DC current;

5 applying the initial DC current across a coil of the actuator for an initial time interval;

measuring a response of the coil to the initially applied DC current;

10 determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied DC current;

increasing incrementally the initial DC current to a predetermined maximum DC current level;

15 measuring the response of the coil to each incremental increase in the initial DC current up to the predetermined maximum DC current level to determine whether the actuator has been successfully unlatched from the magnetic latch;

20 expanding incrementally the initial time interval to a predetermined maximum time interval when the predetermined maximum DC current level applied across the coil for the initial time interval has been unsuccessful in unlatching of the actuator from the magnetic latch;

25 evaluating the response of the coil to each incremental increase in the initial time interval up to the predetermined maximum time interval to determine whether the actuator has been successfully unlatched from the magnetic latch; and

switching to the AC current unlatch process when the predetermined maximum DC current level applied across the coil for the predetermined maximum time interval has been unsuccessful in unlatching the actuator from the magnetic latch.

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7. The method of claim 6, in which the AC unlatch process comprises the steps of:

selecting an initial AC current;  
applying the initial AC current across a coil of the actuator for a  
5 predetermined time interval;  
measuring a response of the coil to the initially applied AC current;  
determining whether the actuator has been successfully unlatched from the  
magnetic latch based on the response of the coil to the applied  
current;  
10 increasing incrementally the initial AC current to a predetermined  
maximum AC current level;  
measuring the response of the coil to each incremental increase in the initial  
AC current up to the predetermined maximum AC current level to  
determine whether the actuator has been successfully unlatched  
15 from the magnetic latch; and  
reporting an unlatch failure upon an unsuccessfully unlatching of the  
actuator from the magnetic latch.

8. The method of claim 5, in which the latch is a magnetic latch, and  
20 in which the AC unlatch process comprises the steps of:

selecting an initial AC current;  
applying the initial AC current across a coil of the actuator for a  
predetermined time interval;  
measuring a response of the coil to the initially applied AC current;  
25 determining whether the actuator has been successfully unlatched from the  
magnetic latch based on the response of the coil to the applied  
current;  
increasing incrementally the initial AC current to a predetermined  
maximum AC current level;  
30 measuring the response of the coil to each incremental increase in the initial  
AC current up to the predetermined maximum AC current level to

determine whether the actuator has been successfully unlatched from the magnetic latch; and  
reporting an unlatch failure upon an unsuccessfully unlatching of the actuator from the magnetic latch.

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9. The method of claim 2, in which the device includes a magnetic latch, and in which the DC unlatch process comprises the steps of:

selecting an initial DC current;

applying the initial DC current across a coil of the actuator for an initial  
time interval;

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measuring a response of the coil to the initially applied DC current;

determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied DC current;

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increasing incrementally the initial DC current to a predetermined maximum DC current level;

measuring the response of the coil to each incremental increase in the initial DC current up to the predetermined maximum DC current level to determine whether the actuator has been successfully unlatched from the magnetic latch;

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expanding incrementally the initial time interval to a predetermined maximum time interval when the predetermined maximum DC current level applied across the coil for the initial time interval has been unsuccessful in unlatching of the actuator from the magnetic latch;

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evaluating the response of the coil to each incremental increase in the initial time interval up to the predetermined maximum time interval to determine whether the actuator has been successfully unlatched from the magnetic latch; and

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switching to the AC current unlatch process when the predetermined maximum DC current level applied across the coil for the

predetermined maximum time interval has been unsuccessful in unlatching the actuator from the magnetic latch.

10. The method of claim 3, in which the device includes a magnetic latch, and in which the AC unlatch process comprises the steps of:

5 selecting an initial AC current;  
applying the initial AC current across a coil of the actuator for a predetermined time interval;  
measuring a response of the coil to the initially applied AC current;  
10 determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied current;  
increasing incrementally the initial AC current to a predetermined maximum AC current level;  
15 measuring the response of the coil to each incremental increase in the initial AC current up to the predetermined maximum AC current level to determine whether the actuator has been successfully unlatched from the magnetic latch; and  
reporting an unlatch failure upon an unsuccessfully unlatching of the  
20 actuator from the magnetic latch.

11. A device comprising:

a thermistor providing a value;  
a controller responsive to the value of the thermistor selecting an unlatch  
25 process that unlatches an actuator of the device; and  
an unlatch procedure programmed into the controller executing the selected unlatch process.

12. The device of claim 11 further comprising a magnetic latch  
30 configured to latch the actuator.

13. The device of claim 11 further comprising a flex circuit supporting the thermistor, and in which the value of the thermistor is a resistance level of the thermistor, wherein the resistance level of the thermistor is indicative of a temperature adjacent the thermistor.

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14. The device of claim 13, in which the temperature adjacent the thermistor is an internal temperature of a head-disc assembly of the data storage device.

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15. The device of claim 12, in which the unlatch procedure executes the selected unlatch process that unlatches the actuator from the magnetic latch.

16. A storage device combination comprising:  
a base deck; and

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an actuator supported by the base deck confined by a latch during periods of inactivity, and unlatched from the latch for periods of activity by steps for unlatching the actuator.

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17. The combination of claim 16, in which the steps for unlatching the actuator comprise:

reading a thermistor to determine a value of the thermistor, wherein the value of the thermistor corresponds to the internal temperature of the data storage device;

comparing the value of the thermistor to a predetermined temperature threshold value;

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initiating a DC current unlatch process when the value of the thermistor is greater than the predetermined temperature threshold value;

validating success of the DC current unlatch process unlatching the actuator from the latch of the data storage device;

activating an AC current unlatch process when the DC current unlatch process is unsuccessful in unlatching the actuator from the latch of the data storage device; and in the alternative commencing the AC current unlatch process when the value of the thermistor is less than the predetermined temperature threshold value.

18. The combination of claim 17, in which the latch is a magnetic latch, and in which the DC unlatch process comprises the steps of:

selecting an initial DC current;

applying the initial DC current across a coil of the actuator for an initial time interval;

measuring a response of the coil to the initially applied DC current;

determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied current;

increasing incrementally the initial DC current to a predetermined maximum DC current level;

measuring the response of the coil to each incremental increase in the initial DC current up to the predetermined maximum DC current level to determine whether the actuator has been successfully unlatched from the magnetic latch;

expanding incrementally the initial time interval to a predetermined maximum time interval when the predetermined maximum DC current level applied across the coil for the initial time interval has been unsuccessful in unlatching of the actuator from the magnetic latch;

evaluating the response of the coil to each incremental increase in the initial time interval up to the predetermined maximum time interval to determine whether the actuator has been successfully unlatched from the magnetic latch; and

switching to the AC current unlatch process when the predetermined maximum DC current level applied across the coil for the predetermined maximum time interval has been unsuccessful in unlatching the actuator from the magnetic latch.

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19. The combination of claim 18, in which the AC unlatch process comprises the steps of:

selecting an initial AC current;

applying the initial AC current across a coil of the actuator for a

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predetermined time interval;

measuring a response of the coil to the initially applied AC current;

determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied current;

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increasing incrementally the initial AC current to a predetermined maximum AC current level;

measuring the response of the coil to each incremental increase in the initial AC current up to the predetermined maximum AC current level to determine whether the actuator has been successfully unlatched

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from the magnetic latch; and

reporting an unlatch failure upon an unsuccessfully unlatching of the actuator from the magnetic latch.

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20. The combination of claim 17, in which the latch is a magnetic latch, and in which the AC unlatch process comprises the steps of:

selecting an initial AC current;

applying the initial AC current across a coil of the actuator for a predetermined time interval;

measuring a response of the coil to the initially applied AC current;



determining whether the actuator has been successfully unlatched from the magnetic latch based on the response of the coil to the applied current;

5                   increasing incrementally the initial AC current to a predetermined maximum AC current level;

measuring the response of the coil to each incremental increase in the initial AC current up to the predetermined maximum AC current level to determine whether the actuator has been successfully unlatched from the magnetic latch; and

10                   reporting an unlatch failure upon an unsuccessfully unlatching of the actuator from the magnetic latch.